2007

Following Fall Brook

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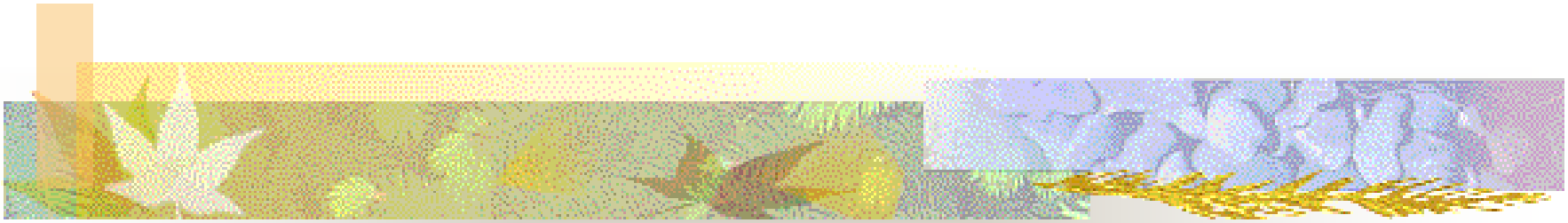

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Introduction

- Fall Brook is a part of the Taunton River Watershed which drains into Mount Hope Bay.
- In studying Fall Brook we examined two separate sites, Wareham Street and Wood Street.

Purpose

- To determine how land use affects nitrate and phosphate levels.
- We tested the nitrate and phosphate levels at each location every hour for twenty four hours from October 9, 2006 to October 10, 2006.

Hypothesis

- We believe that the nitrate and phosphate levels will increase as the river flows downstream into the Nemasket River due to an increase in land use.

Site Locations

Wareham Street

- Located next to a horse farm.
- Downstream from a cranberry bog.
- In a heavily wooded area.

Wood Street

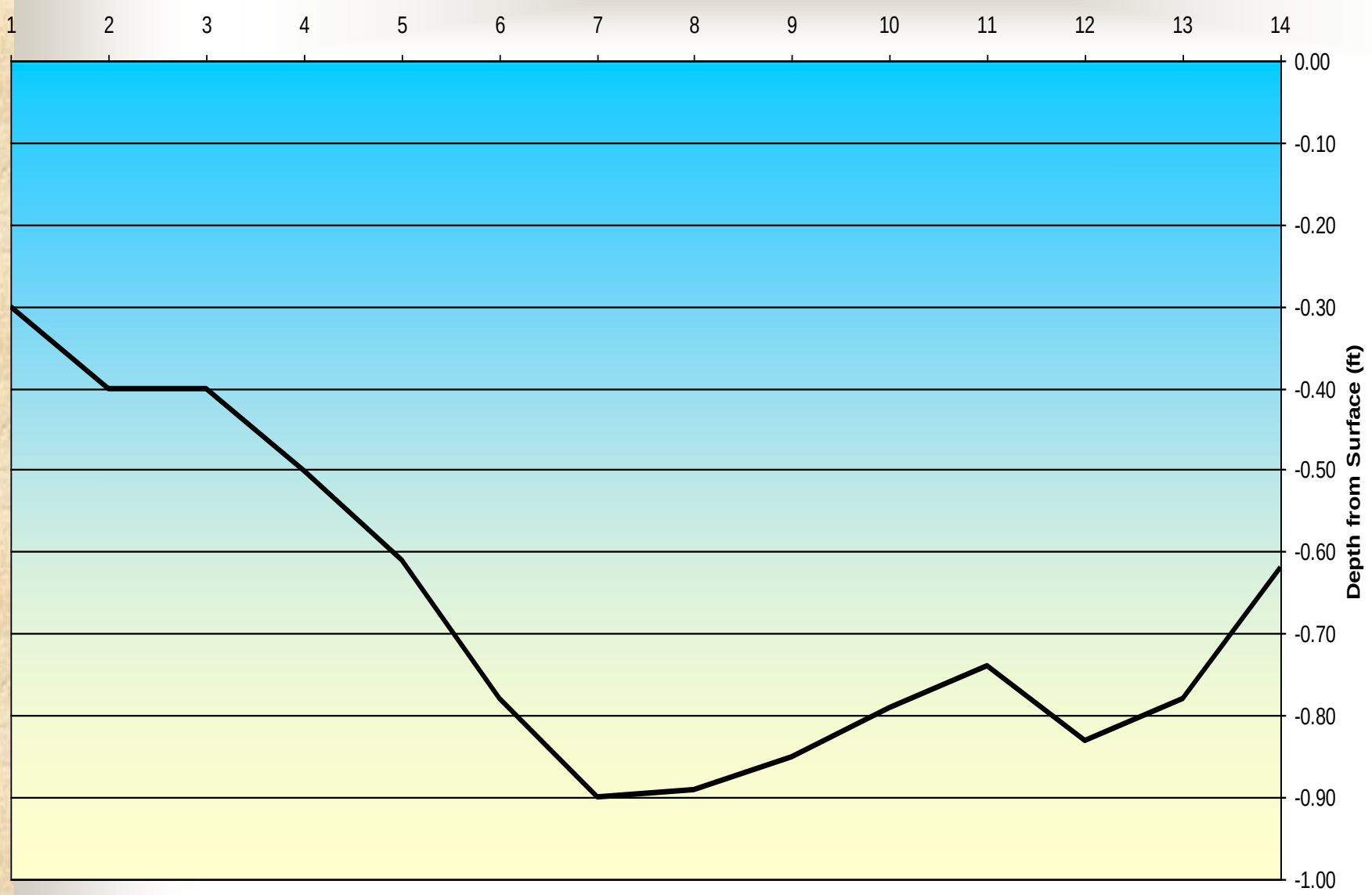
- Of sites tested, furthest downstream
- In wooded area
- Runs through conservation land
- Large Riparian zone

Site Pictures

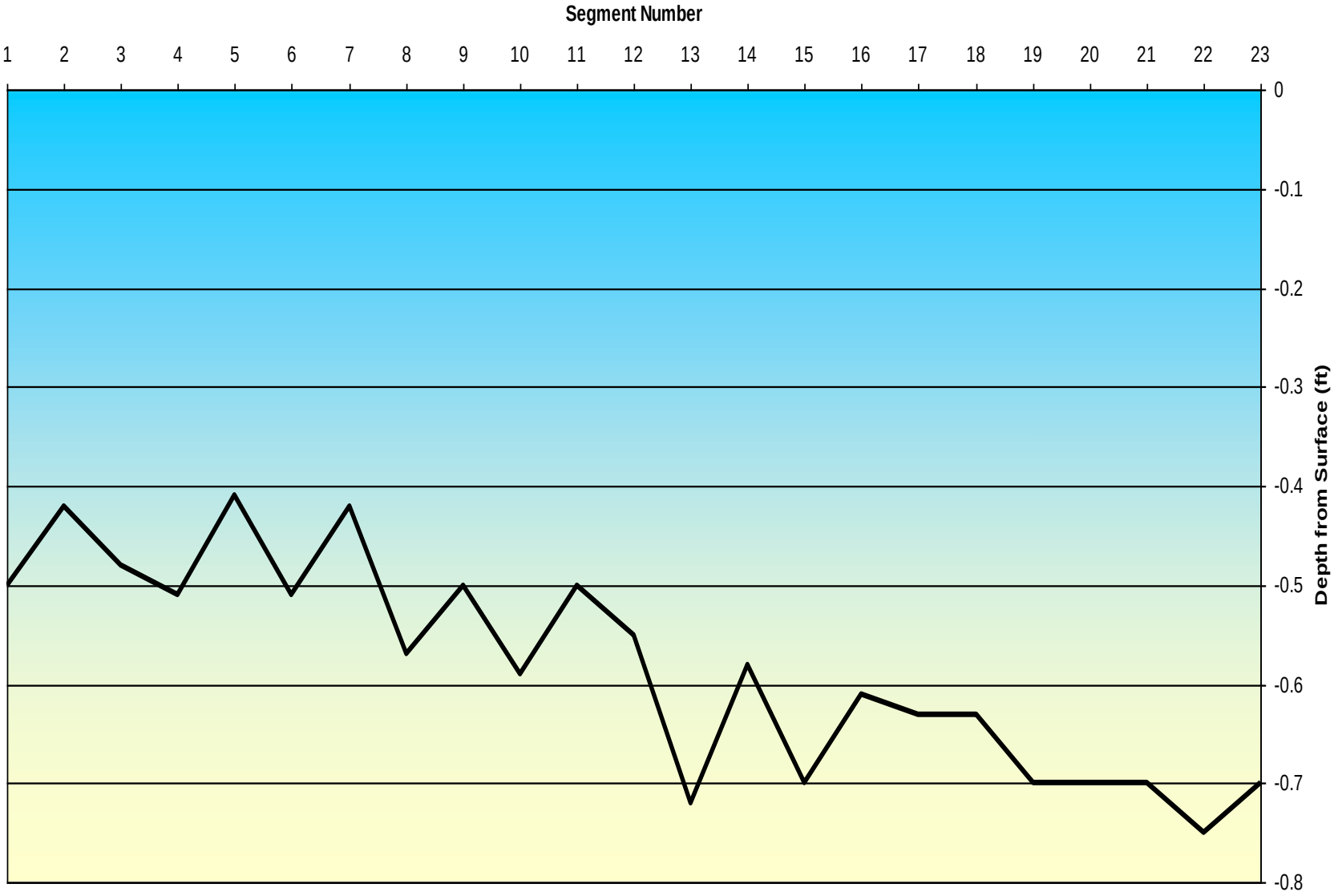
Wareham Street

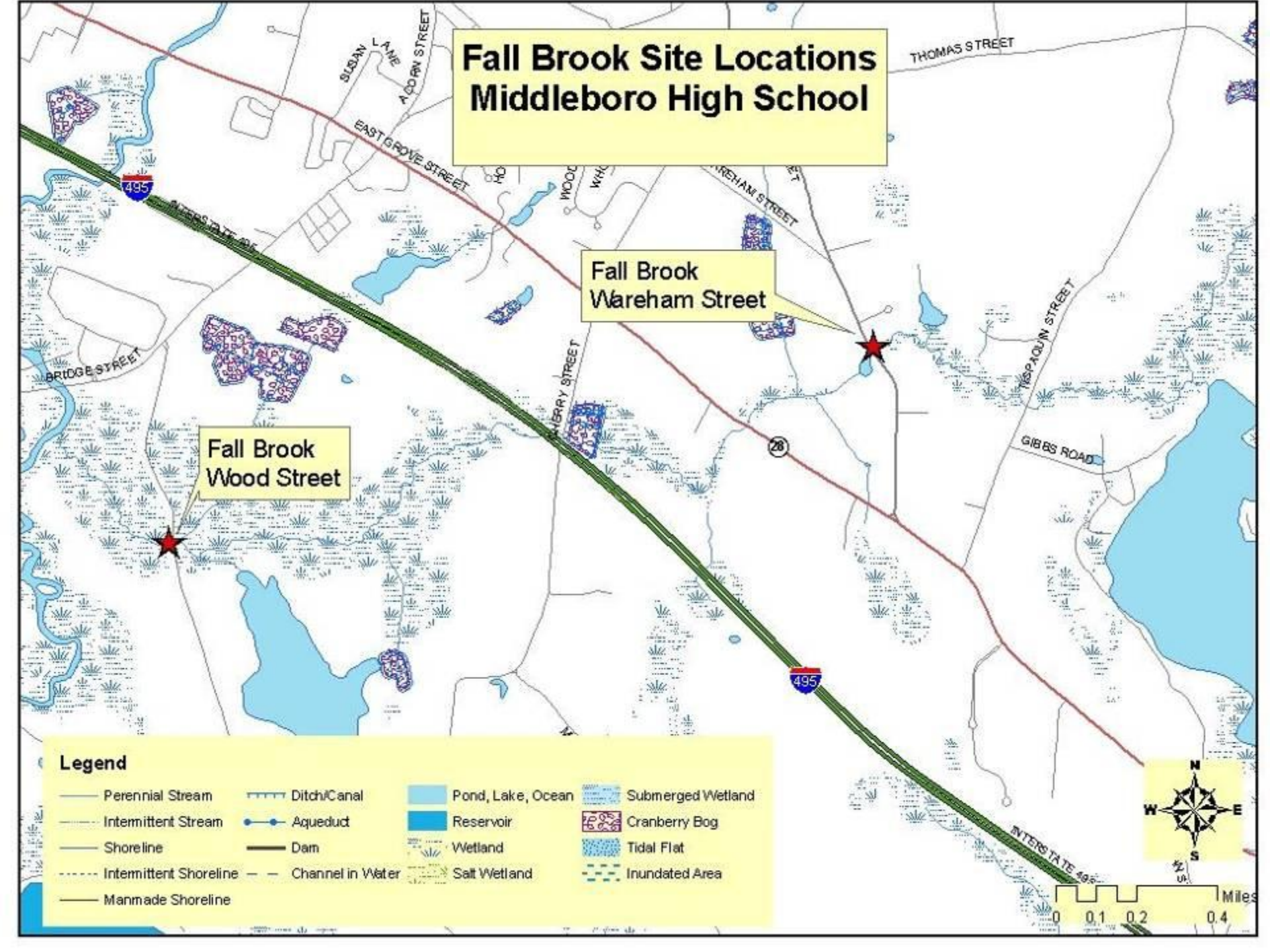
Wood Street

Bottom Profile: Fall Brook, Wareham Street



Bottom Profile: Fall Brook, Wood Street



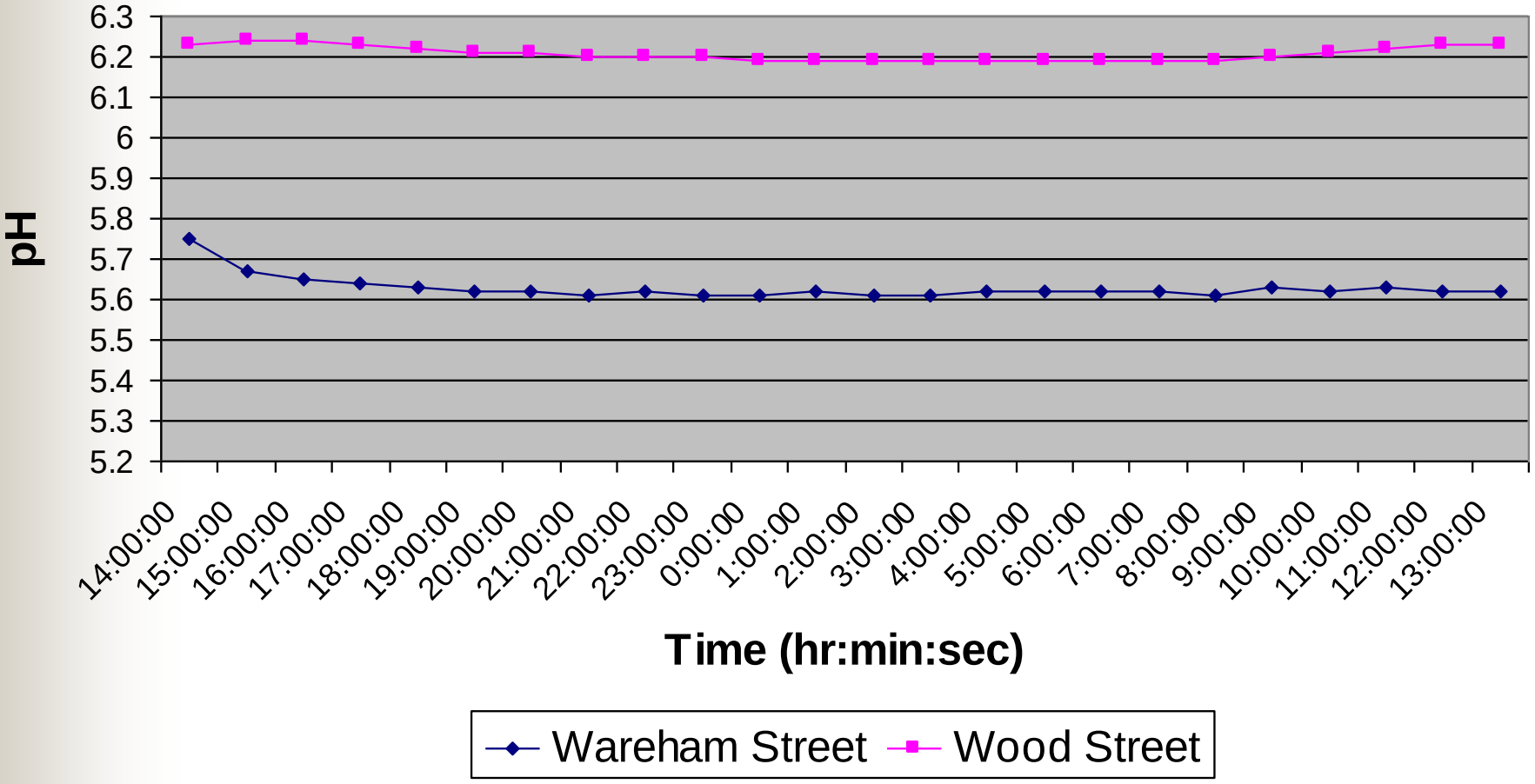

Fall Brook Site Locations
Middleboro High School
Fall Brook
Wareham Street
Fall Brook
Wood Street
THOMAS STREET
EAST GROVE STREET
SUSAN LANE
ADAM STREET
WAREHAM STREET
WOOD STREET
BRIDGE STREET
PERRY STREET
WEQUAQUIN STREET
GIBBS ROAD
INTERSTATE 495
495
28
Legend
Perennial Stream
Intermittent Stream
Shoreline
Intermittent Shoreline
Manmade Shoreline
Ditch/Canal
Aqueduct
Dam
Channel in Water
Pond, Lake, Ocean
Reservoir
Wetland
Salt Wetland
Submerged Wetland
Cranberry Bog
Tidal Flat
Inundated Area
N
W
E
S
Miles
0
0.1
0.2
0.4

Experimental Design

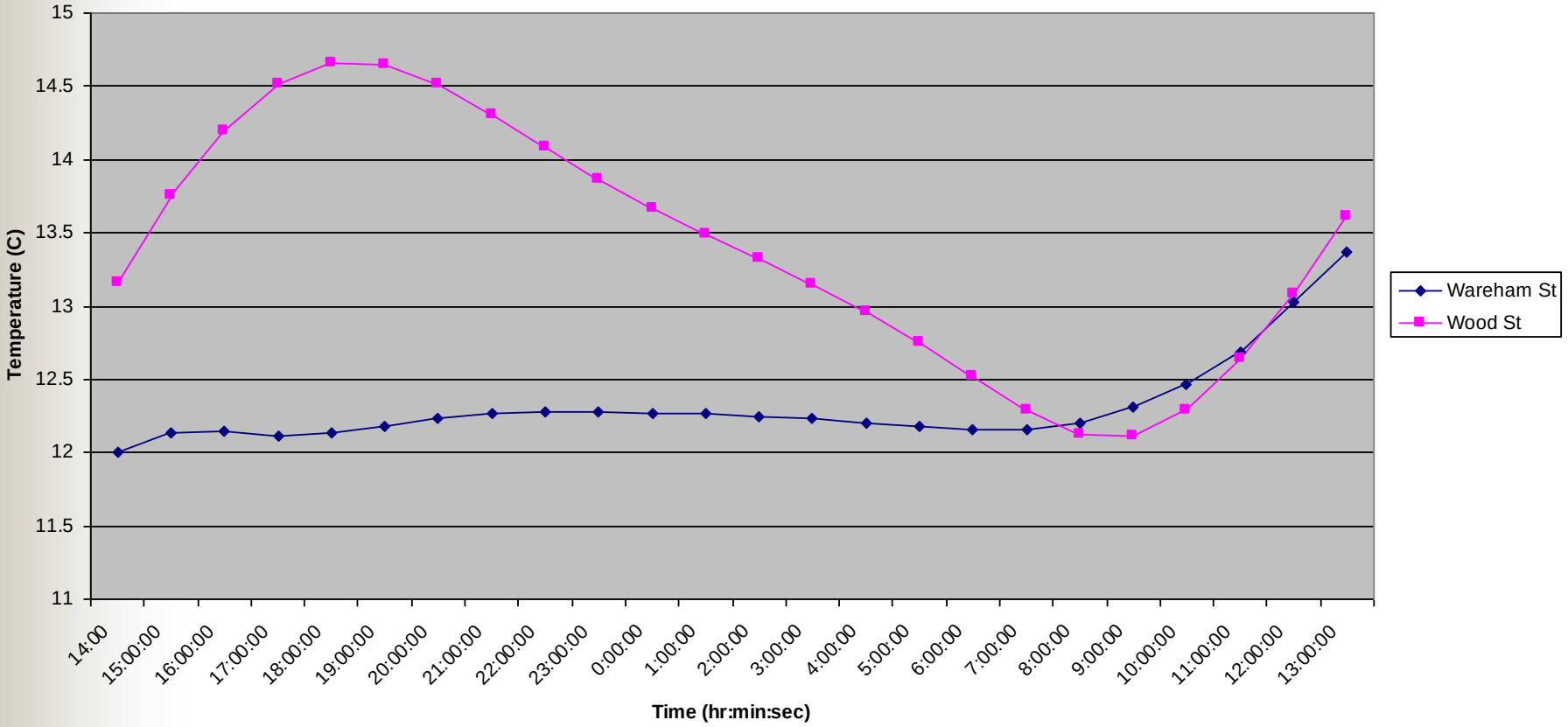
- Grab Samples
  - Obtain samples in standard grab sample containers
  - Filter (approx. 30mL) into small brown bottles
  - Freeze samples
- Sigmas
  - Anchored Sigma to tree on the bank of each site.
  - Put ice in the bottom of the compartment
  - Let it run for 24 hours.
  - Discard every other sample.
- Put Hydrolab in water, making sure it doesn't touch the bottom.
  - Tests for pH, dissolved oxygen, and temperature.

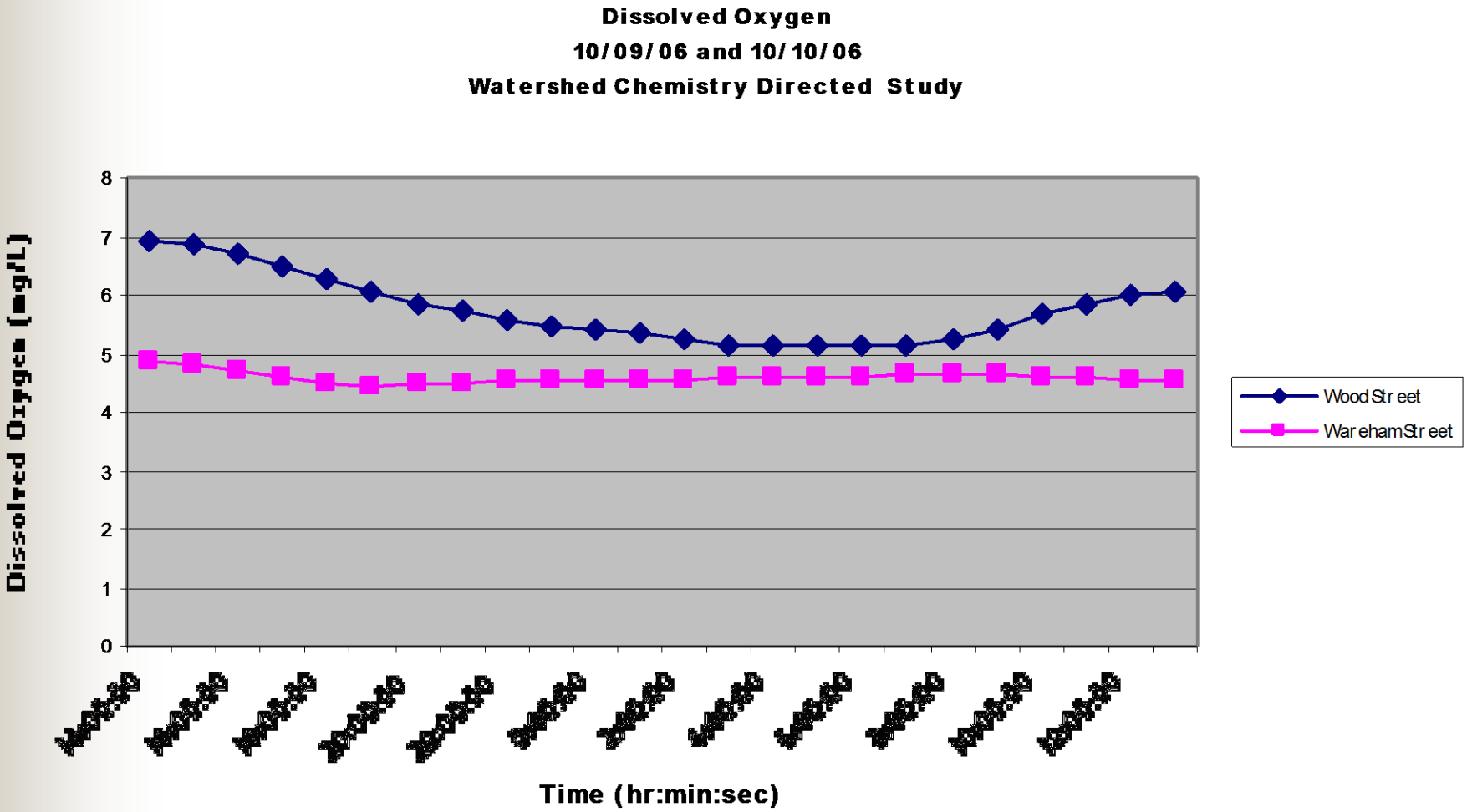
Sigma and Hydrolab

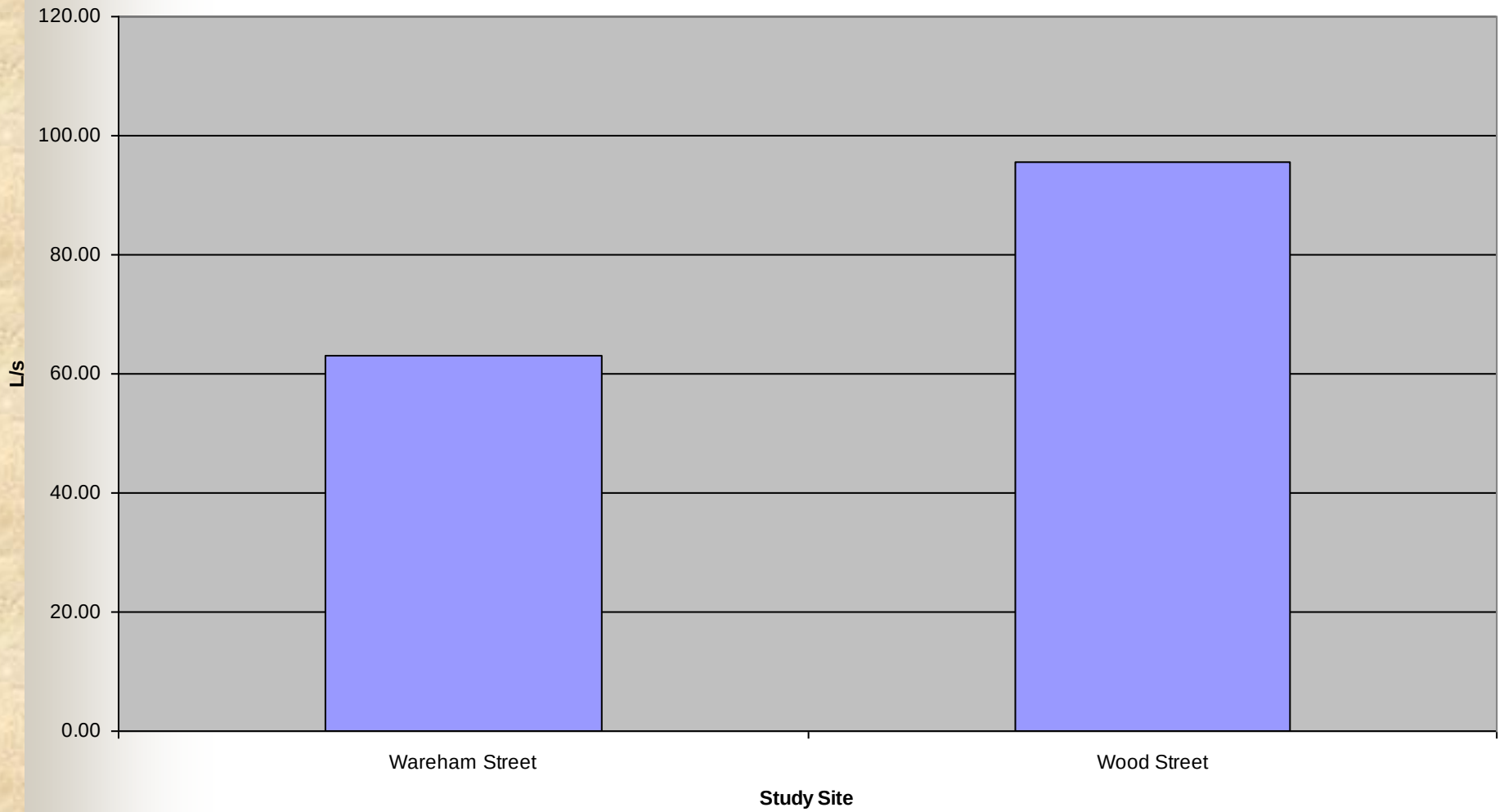
pH Fall Brook
10/9/06 and 10/10/06
Water Chemistry Directed Study



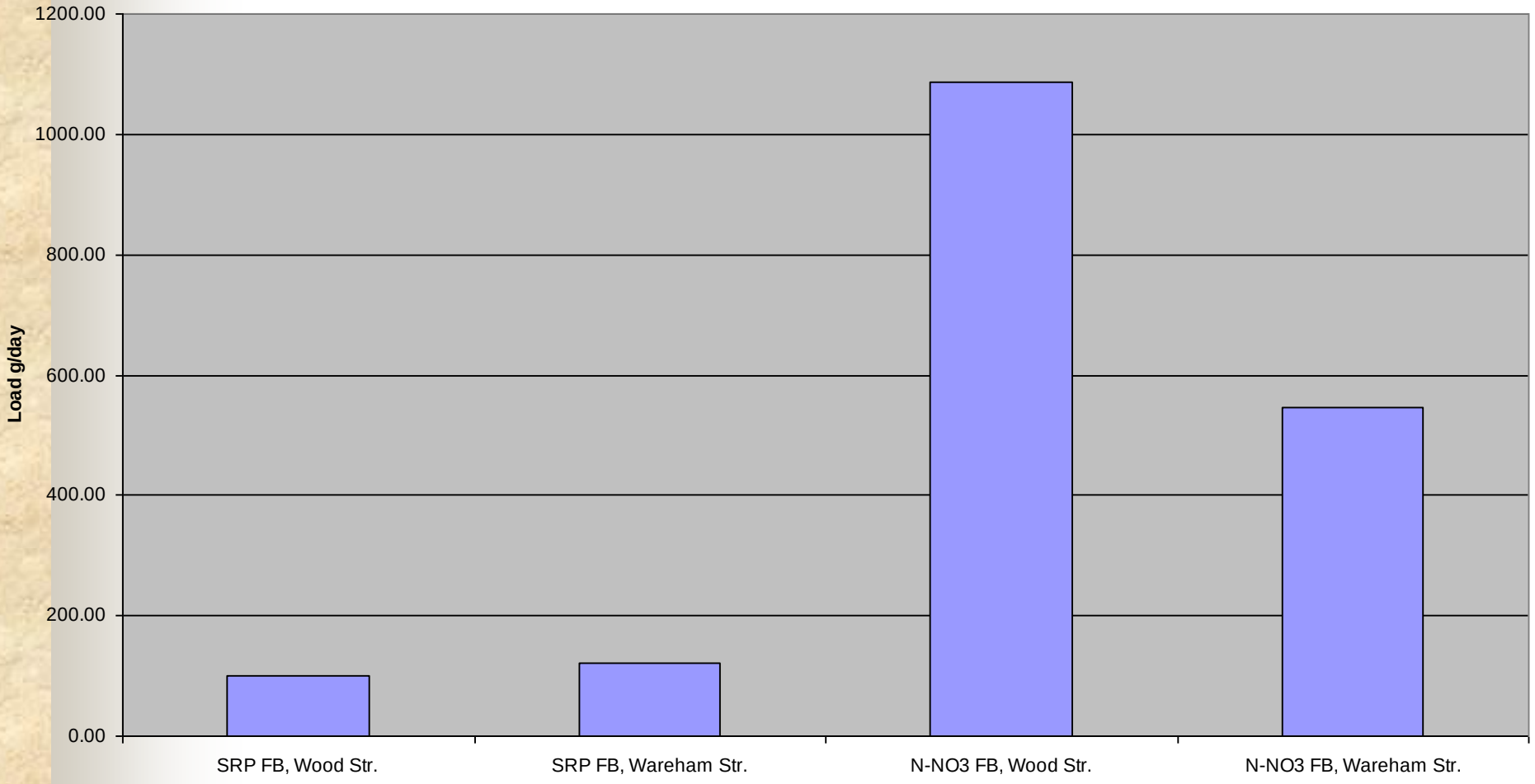
Temperature of Fall Brook
10/9/06 and 10/10/06
Watershed Chemistry Directed Study




Dissolved Oxygen
10/09/06 and 10/10/06
Watershed Chemistry Directed Study
Dissolved Oxygen (mg/L)
8
7
6
5
4
3
2
1
0
Time (hr:min:sec)
Wood Street
Wareham Street


Discharge at Fall Brook: Wareham and Wood Street
120.00
100.00
80.00
60.00
40.00
20.00
0.00
L/s
Wareham Street
Wood Street
Study Site

SRP and N-NO3 Loads For Study Sites Fall Brook: Wareham and Wood Street



Conclusion

- Wood Street has higher nitrate levels
  - Further downstream
    - more land use.
  - Higher discharge and load
    - More water and pollutants going through location
- Phosphate has barely any difference
  - Levels too low to create a large effect.
- pH, Dissolved Oxygen, Temperature levels differ only slightly

Conclusion contd.

- Nitrate and Phosphate levels were non- toxic
  - Large Riparian zone
    - Improves water quality
      - Sediment filter
      - Pollution filter
      - Regulate stream flow
    - Bank Stabilizer
    - Allows for biodiversity within the ecosystem of the River at each location.
- Hypothesis was incorrect
  - Phosphate levels did not change significantly

Possible Threats to Fall Brook

- Development
  - Destroys Riparian zone
    - Pollutants are not leeched out
- Cranberry bogs not a threat
  - Environmental regulations ensure lower chemical levels

Special Thanks to:

Bridgewater State College, Kim McCoy, Dr. Kevin Curry, Kathy Russel, Theresa Craig, and Middleboro High School for their support and guidance throughout this project.